

ABSTRACT OF THE DISCLOSURE

A substrate processing apparatus for drying a substrate comprises a chamber, a vapor supply part, an open/close valve, and a controller. While the chamber is hermetically sealed, a substrate is cleaned by pure water. Water vapor of high temperature and pressure is thereafter supplied from the vapor supply part, to realize rise in temperature and pressure in the chamber. At the time when the substrate surface is covered with pure water at a temperature of 100 degrees centigrade or higher, the controller brings the open/close valve to an open state to release an atmosphere in the chamber in the atmosphere, thereby instantaneously bringing the chamber to a condition of reduced pressure. As a result, water mark formation is suppressed in a drying process of a processing solution adhered to the substrate.